REMARKS

Applicants appreciate the thorough review of the present application as reflected in the Official Action mailed May 5, 2004. Applicants have amended Claim 13 to clarify that the quality of service information is network quality of service information.

The IDSs

Applicants appreciate the return of the initialed copies of the previously submitted PTO-1449 forms. Applicants also submit herewith an IDS of additional materials for consideration by the Examiner. Applicants request that the Examiner return an initialed copy of the PTO-1449 form submitted with the accompanying IDS.

The Objection to the Specification

Applicants have amended the specification to provide the serial number of the related application. Accordingly, Applicants submit that the objection to the specification has been overcome.

The Claims Are Not Anticipated

Claims 1-40 stand rejected under 35 U.S.C. § 102(b) as anticipated by United States Patent No. 5,774,668 to Choquier *et al.* (hereinafter "Choquier"). Independent Claim 1 recites "**generating workload metrics** associated with respective ones of the data processing systems utilizing the workload information **and the corresponding network quality of service information for the data processing systems**" and "**distributing the requested connection** to instances of the application executing on the data processing systems **based on the generated workload metrics.**" Corresponding recitations are found in Claims 21 and 31. Thus, embodiments of the present invention use a metric based on **both** workload information and **network quality of service** information in the distribution of connection requests.

In rejecting Claims 1, 21 and 31, the Official Action cites to Choquier, col. 10, lines 67-68, col. 11, lines 1-12, col. 14, lines 60-67 and col. 15, lines 1-6 as disclosing the recitations of the claims regarding generation of workload metrics based on workload information and network quality of service information. Official Action, p.

3. However, as illustrated below, these cited portion of Choquier only relate to workload information, not network quality of service information as recited in the independent claims.

In particular, col. 10, line 67 to col. 11, line 12 of Choquier states:

> Each local map 140 contains a CPU LOAD value and a CPU INDEX value for the respective server 120. The CPU LOAD indicates the current load of the server 120. The CPU LOAD is a numerical value, preferably ranging from 0 to 100, which indicates the percentage of available time that the CPU (or CPUs) of the server 120 is processing service requests. A CPU LOAD of zero indicates that the server 120 is minimally loaded, and a CPU LOAD of 100 indicates that the server is heavily loaded. In the preferred embodiment, the CPU LOAD is periodically calculated by the operating system (NT) on each server 120, and is taken as an average over a 5 second period. The CPU LOAD values contained in the local maps 140 are periodically updated to reflect changes in server loads.

This cited portion of Choquier only describes the CPU load, not network quality of service information. The CPU LOAD is a measure of the available time of a CPU for processing requests. The CPU INDEX is a benchmark value indicating the processing power of a particular server. Choquier, col. 11, lines 13-14. There is no discussion of network quality of service but only CPU load.

The Official Action also cites to col. 14, line 60 to col. 15, line 6 of Choquier, which states:

> FIG. 7 illustrates a first preferred load balancing method, which selects the server 120 which most recently had the highest available CPU processing power. As illustrated by blocks 702-710, the CPU LOAD and CPU INDEX values for each server 120 in the service group are used to calculate an AVAILABLE CPU value for each such server. The available CPU processing power (AVAILABLE CPU) is calculated for a server 120 by multiplying the server's CPU INDEX by the server's FREE CPU, where FREE CPU is a value ranging from 0 to 100 which is simply calculated by subtracting CPU LOAD from 100. With reference to block 712, once AVAILABLE CPU has been calculated for each server 120 in the service group, the server with the highest AVAILABLE CPU is selected to handle the service request.

This cited portion of Choquier also only describes CPU load, not network quality of service. Accordingly, Applicants submit that the cited portions of Choquier do not disclose or suggest the generation of a metric based on workload information **and** network quality of service as recited in each of Claims 1, 21 and 31.

The above quoted portions of Choquier are also cited in the Official Action as disclosing "obtaining network quality of service information associated with communications over the network for respective ones of the data processing systems." Official Action, p.3. However, as discussed above, the cited portions of Choquier describe CPU load, not network quality of service information. Accordingly, Applicants submit that the cited portions of Choquier also do not disclose or suggest these recitations of Claims 1, 21 and 31.

With regard to the recitations of Claims 1, 21 and 31 that the connection requests are distributed based on the generated metric, the Official Action cites to col. 11, lines 30-43 of Choquier. Official Action, p. 3. This portion of Choquier states:

> With further reference to FIG. 4, each local map 140 contains at least one service description 400, and contains multiple service descriptions 400 (as shown in FIG. 4) if the server 120 is currently allocated to multiple services. Each service description 400 includes a service name, the state of the service DLL (launching, active, active-accepting, or stopped), the client count (i.e., the number of client-users that are currently assigned to the server 120 to use the service), and the version number of the service DLL. The service descriptions 400 contained within the service map 136 are used for various purposes by different components of the host data center 104. For example, the service descriptions 400 are used by the Gateways 126 to locate servers 120 for handling client service requests.

Choquier, col. 11, lines 30-43. Applicants submit that this portion of Choquier does not disclose or suggest distributing connection requests based on a metric that is based on network quality of service information as recited in Claims 1, 21 and 31. It appears that this portion of Choquier also relates to availability of a service DLL, not network quality of service.

In light of the above discussion, Applicants submit that Claims 1, 21 and 31 are not anticipated by Choquier. Applicants further submit that the dependent claims are patentable at least as depending from a patentable base claim. However, Applicants submit that certain of the dependent claims are also separately patentable.

Claims 2, 22 and 32 recite specific measures of network quality of service. The Official Action cites to the same portions of Choquier as discussed above as disclosing these recitations. Official Action, p. 3. However, as discussed above, these portions of Choquier do not relate to network quality of service. Accordingly,

Applicants submit that Claims 2, 22 and 32 are separately patentable for at least these additional reasons.

Claims 4, 17, 24 and 34 recite "the network quality of service information comprises a loss weight (F-loss) based on packet loss ratio, a network timeout weight (F-timeout) based on a network timeout ratio and a connection weight (F-con) based on a number of active connections." The Official Action cites to the same portions of Choquier as discussed above as disclosing these recitations. Official Action, p. 3. However, there is no mention of, for example, packet loss ratio or network timeout ratio in the cited portions of Choquier. Accordingly, Applicants submit that Claims 4, 17, 24 and 34 are separately patentable for at least these additional reasons.

With regard to Claims 5, 25 and 35, the Official Action does not cite to any portion of Choquier in rejecting these claims. Official Action, p. 4. Accordingly, Applicants submit that Claims 5, 25 and 35 are separately patentable for at least these additional reasons.

In the interest of brevity, Applicants will not address each of the dependent claims separately. However, Claims 6, 19, 26, 36, 7, 18, 20, 27, 37, 8, 28, 38, 9, 29, 39, 10, 30, 40 and 12 are each rejected on the portions of Choquier discussed above and each recite quality of service information. Accordingly, Applicants submit that these claims are also separately patentable for the reasons discussed above.

Independent Claim 13 recites "a workload distributer which selects data processing systems in a cluster of data processing systems for distribution of connections based on network quality of service information associated with the data processing systems and workload information associated with the data processing systems." The Official Action cites to col. 10, lines 34-67 to col. 11, lines 1-12 of Choquier as disclosing these recitations of Claim 13. Official Action, p. 6. This cited portion of Choquier states:

> Still referring to FIG. 1, the service map 136 is preferably generated by a service map dispatcher 144, which may be implemented on a single microcomputer. To generate the service map 136, each server 120 periodically generates a local map 140, and transmits the local map 140 to the service map dispatcher 144. Each local map 140 contains up-to-date information about the respective server 120 that generated the local map, including information about the server's current load. The service map dispatcher 144 builds the service map 136 from all of the local maps 140 it receives, and then broadcasts the service map 136 to all of the Gateways 136 over the LAN 122. In other

embodiments, the servers 120 broadcast their respective local maps 140 to the Gateways 126, and each Gateway builds the service map 136 from the local maps it receives.

In the preferred embodiment, the service map dispatcher 144 broadcasts a new service map 136 every 30 seconds. Each time a new service map 136 is broadcasted, every Gateway 126 receives and locally stores a copy of the new service map 136, overwriting old versions of the service map. The Arbiters microcomputers 128 also receive and store copies of the service map 136, and use the service map to determine the states of the servers 120 that are currently assigned to the respective service groups.

FIG. 4 illustrates the information contained within each server-specific local map 140, and also illustrates the process by which the service map dispatcher 144 builds the service map 136 from the local maps 140. The service map 136 contains the local map 140 for each operational server 120 within the host data center 104, along with the corresponding server IDs (indicated by the numbers 1, 2, . . . n) for the servers 120.

Each local map 140 contains a CPU LOAD value and a CPU INDEX value for the respective server 120. The CPU LOAD indicates the current load of the server 120. The CPU LOAD is a numerical value, preferably ranging from 0 to 100, which indicates the percentage of available time that the CPU (or CPUs) of the server 120 is processing service requests. A CPU LOAD of zero indicates that the server 120 is minimally loaded, and a CPU LOAD of 100 indicates that the server is heavily loaded. In the preferred embodiment, the CPU LOAD is periodically calculated by the operating system (NT) on each server 120, and is taken as an average over a 5 second period. The CPU LOAD values contained in the local maps 140 are periodically updated to reflect changes in server loads.

Choquier, col. 10, line 34 to col. 11, line 12. However, this portion of Choquier does not describe the use of network quality of service information but describes the use of CPU load. Accordingly, Applicants submit that Claim 13 is neither disclosed nor suggested by the cited portions of Choquier. Applicants, therefore, submit that Claim 13 and the claims that depend from Claim 13 are patentable over Choquier.

While each of the claims that depend from Claim 13 are patentable as depending from a patentable base claim, Applicants submit that certain of these dependent claims are also separately patentable. For example, Claim 14 recites that the router is a routing communication protocol stack. Applicants submit that the cited portions of Choquier applied to Claim 14 at page 7 of the Official Action do not describe a routing communication protocol stack as that term is used in the present

application. Accordingly, Applicants submit that Claim 14 is separately patentable over the cited reference for at least these additional reasons.

Claim 15 recites that the connection requests are to a DVIPA. Applicants submit that the cited portions of Choquier applied to Claim 15 at page 7 of the Official Action do not describe a DVIPA or even a virtual IP address. Accordingly, Applicants submit that Claim 15 is separately patentable for at least these additional reasons.

Conclusion

In light of the above discussion, Applicants submit that the present application is in condition for allowance, which action is respectfully requested. If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call Applicants' representative at (919) 854-1400.

It is not believed that an extension of time and/or additional fee(s), including fees for net addition of claims, are required, beyond those that may otherwise be provided for in documents accompanying this paper. In the event, however, that an extension of time is necessary to allow consideration of this paper, such an extension is hereby petitioned for under 37 C.F.R. §1.136(a). Any additional fees believed to be due in connection with this paper may be charged to IBM Deposit Account No. 09-0461.

Respectfully submitted,

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